

SEQUENCE LISTING

<110> Dean A. Falb
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Dennis Huszar
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<120> Compositions and Methods for the Treatment and Diagnosis of Cardiovascular Disease

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| ccgccgccta | ggactagggg | gtgggggacg | gacaagcccc | g atg ccg ggg gag acg | | 176 |
| | | | | Met Pro Gly Glu Thr | | |
| | | | | 1 5 | | |

| | |
|---|-----|
| gaa gag ccg aga ccc ccg gag cag cag gac cag gaa ggg gga gag gcg | 224 |
| Glu Glu Pro Arg Pro Pro Glu Gln Gln Asp Gln Glu Gly Gly Glu Ala | |
| 10 15 20 | |

| | |
|---|-----|
| gcc aag gcg gct ccg gag gag ccc caa caa cgg ccc cct gag gcg gtc | 272 |
| Ala Lys Ala Ala Pro Glu Glu Pro Gln Gln Arg Pro Pro Glu Ala Val | |

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| 25 | | | | | | | | | | 30 | | | | | 35 | | | | | |
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| gcg | gcg | gcg | cct | gca | ggg | acc | act | agc | agc | cgc | gtg | ctg | agg | gga | ggt | 320 | | | | |
| Ala | Ala | Ala | Pro | Ala | Gly | Thr | Thr | Ser | Ser | Arg | Val | Leu | Arg | Gly | Gly | | | | | |
| 40 | | | 45 | | | | 50 | | | | | | | | | | | | | |
| cgg | gac | cga | ggc | cgg | gcc | gct | gcg | gcc | gcc | gcc | gcc | gca | gct | gtg | tcc | 368 | | | | |
| Arg | Asp | Arg | Gly | Arg | Ala | Ala | Ala | Ala | Ala | Ala | Ala | Ala | Ala | Val | Ser | | | | | |
| 55 | | 60 | | | | 65 | | | | | | | | | | | | | | |
| cgc | cgg | agg | aag | gcc | gag | tat | ccc | cgc | cgg | cgg | agg | agc | agc | ccc | agc | 416 | | | | |
| Arg | Arg | Arg | Lys | Ala | Glu | Tyr | Pro | Arg | Arg | Arg | Arg | Ser | Ser | Pro | Ser | | | | | |
| 70 | 75 | | | | 80 | | | | 85 | | | | | | | | | | | |
| gcc | agg | cct | ccc | gac | gtc | ccc | ggg | cag | cag | ccc | cag | gcc | gcg | aag | tcc | 464 | | | | |
| Ala | Arg | Pro | Pro | Asp | Val | Pro | Gly | Gln | Gln | Pro | Gln | Ala | Ala | Lys | Ser | | | | | |
| 90 | | | 95 | | | | 100 | | | | | | | | | | | | | |
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| Pro | Ser | Pro | Val | Gln | Gly | Lys | Lys | Ser | Pro | Arg | Leu | Leu | Cys | Ile | Glu | | | | | |
| 105 | | | 110 | | | | 115 | | | | | | | | | | | | | |
| aaa | gta | aca | act | gat | aaa | gat | ccc | aag | gaa | gaa | aaa | gag | gaa | gaa | gac | 560 | | | | |
| Lys | Val | Thr | Thr | Asp | Lys | Asp | Pro | Lys | Glu | Glu | Lys | Glu | Glu | Glu | Asp | | | | | |
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| gat | tct | gcc | ctc | cct | cag | gaa | gtt | tcc | att | gct | gca | tct | aga | cct | agc | 608 | | | | |
| Asp | Ser | Ala | Leu | Pro | Gln | Glu | Val | Ser | Ile | Ala | Ala | Ser | Arg | Pro | Ser | | | | | |
| 135 | 140 | | | | 145 | | | | | | | | | | | | | | | |
| cgg | ggc | tgg | cgt | agt | agt | agg | aca | tct | gtt | tct | cgc | cat | cgt | gat | aca | 656 | | | | |
| Arg | Gly | Trp | Arg | Ser | Ser | Arg | Thr | Ser | Val | Ser | Arg | His | Arg | Asp | Thr | | | | | |
| 150 | 155 | | | | 160 | | | | 165 | | | | | | | | | | | |
| gag | aac | acc | cga | agc | tct | cgg | tcc | aag | acc | ggt | tca | ttg | cag | ctc | att | 704 | | | | |
| Glu | Asn | Thr | Arg | Ser | Ser | Arg | Ser | Lys | Thr | Gly | Ser | Leu | Gln | Leu | Ile | | | | | |
| 170 | | | 175 | | | | 180 | | | | | | | | | | | | | |
| tgc | aag | tca | gaa | cca | aat | aca | gac | caa | ctt | gat | tat | gat | gtt | gga | gaa | 752 | | | | |
| Cys | Lys | Ser | Glu | Pro | Asn | Thr | Asp | Gln | Leu | Asp | Tyr | Asp | Val | Gly | Glu | | | | | |
| 185 | | | 190 | | | | 195 | | | | | | | | | | | | | |
| gag | cat | cag | tct | cca | ggt | ggc | att | agt | ggt | gaa | gag | gaa | gag | gag | gag | 800 | | | | |
| Glu | His | Gln | Ser | Pro | Gly | Gly | Ile | Ser | Gly | Glu | Glu | Glu | Glu | Glu | Glu | | | | | |
| 200 | | | 205 | | | | 210 | | | | | | | | | | | | | |
| gaa | gaa | gag | atg | tta | atc | agt | gaa | gag | gag | ata | cca | ttc | aaa | gat | gat | 848 | | | | |
| Glu | Glu | Glu | Met | Leu | Ile | Ser | Glu | Glu | Glu | Ile | Pro | Phe | Lys | Asp | Asp | | | | | |
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| cca | aga | gat | gag | acc | tac | aaa | ccc | cac | tta | gaa | agg | gaa | acc | cca | aag | 896 | | | | |
| Pro | Arg | Asp | Glu | Thr | Tyr | Lys | Pro | His | Leu | Glu | Arg | Glu | Thr | Pro | Lys | | | | | |
| 230 | 235 | | | | 240 | | | | 245 | | | | | | | | | | | |
| cca | cgg | aga | aaa | tca | ggg | aag | gta | aaa | gaa | gag | aag | gag | aag | aag | gaa | 944 | | | | |
| Pro | Arg | Arg | Lys | Ser | Gly | Lys | Val | Lys | Glu | Glu | Lys | Glu | Lys | Lys | Glu | | | | | |
| 250 | | | 255 | | | | 260 | | | | | | | | | | | | | |

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|---|------|
| att aaa gtg gaa gta gag gtg gag gtg aaa gaa gag gag aat gaa att | 992 |
| Ile Lys Val Glu Val Glu Val Glu Val Lys Glu Glu Glu Asn Glu Ile | |
| 265 270 275 | |
| aga gag gat gag gaa cct cca agg aag aga gga aga aga cga aaa gat | 1040 |
| Arg Glu Asp Glu Glu Pro Pro Arg Lys Arg Gly Arg Arg Lys Asp | |
| 280 285 290 | |
| gac aaa agt cca cgt tta ccc aaa agg aga aaa aag cct cca atc cag | 1088 |
| Asp Lys Ser Pro Arg Leu Pro Lys Arg Arg Lys Lys Pro Pro Ile Gln | |
| 295 300 305 | |
| tat gtc cgt tgt gag atg gaa gga tgt gga act gtc ctt gcc cat cct | 1136 |
| Tyr Val Arg Cys Glu Met Glu Gly Cys Gly Thr Val Leu Ala His Pro | |
| 310 315 320 325 | |
| cgc tat ttg cag cac cac att aaa tac cag cat ttg ctg aag aag aaa | 1184 |
| Arg Tyr Leu Gln His His Ile Lys Tyr Gln His Leu Leu Lys Lys Lys | |
| 330 335 340 | |
| tat gta tgt ccc cat ccc tcc tgt gga cga ctc ttc agg ctt cag aag | 1232 |
| Tyr Val Cys Pro His Pro Ser Cys Gly Arg Leu Phe Arg Leu Gln Lys | |
| 345 350 355 | |
| caa ctt ctg cga cat gcc aaa cat cat aca gat caa agg gat tat atc | 1280 |
| Gln Leu Leu Arg His Ala Lys His His Thr Asp Gln Arg Asp Tyr Ile | |
| 360 365 370 | |
| tgt gaa tat tgt gct cgg gcc ttc aag agt tcc cac aat ctg gca gtg | 1328 |
| Cys Glu Tyr Cys Ala Arg Ala Phe Lys Ser Ser His Asn Leu Ala Val | |
| 375 380 385 | |
| cac cgg atg att cac act ggc gag aag cca tta caa tgt gag atc tgt | 1376 |
| His Arg Met Ile His Thr Gly Glu Lys Pro Leu Gln Cys Glu Ile Cys | |
| 390 395 400 405 | |
| gga ttt act tgt cga caa aag gca tct ctt aat tgg cac atg aag aaa | 1424 |
| Gly Phe Thr Cys Arg Gln Lys Ala Ser Leu Asn Trp His Met Lys Lys | |
| 410 415 420 | |
| cat gat gca gac tcc ttc tac cag ttt tct tgc aat atc tgt ggc aaa | 1472 |
| His Asp Ala Asp Ser Phe Tyr Gln Phe Ser Cys Asn Ile Cys Gly Lys | |
| 425 430 435 | |
| aaa ttt gag aag aag gac agc gta gtg gca cac aag gca aaa agc cac | 1520 |
| Lys Phe Glu Lys Lys Asp Ser Val Val Ala His Lys Ala Lys Ser His | |
| 440 445 450 | |
| cct gag gtg ctg att gca gaa gct ctg gct gcc aat gca ggc gcc ctc | 1568 |
| Pro Glu Val Leu Ile Ala Glu Ala Leu Ala Ala Asn Ala Gly Ala Leu | |
| 455 460 465 | |
| atc acc agc aca gat atc ttg ggc act aac cca gag tcc ctg acg cag | 1616 |
| Ile Thr Ser Thr Asp Ile Leu Gly Thr Asn Pro Glu Ser Leu Thr Gln | |
| 470 475 480 485 | |
| cct tca gat ggt cag ggt ctt cct ctt ctt cct gag ccc ttg gga aac | 1664 |
| Pro Ser Asp Gly Gln Gly Leu Pro Leu Leu Pro Glu Pro Leu Gly Asn | |

| 490 | 495 | 500 | |
|--|-----|-------------|------|
| tca acc tct gga gag tgc cta ctg tta gaa gct gaa ggg atg tca aag | | | 1712 |
| Ser Thr Ser Gly Glu Cys Leu Leu Leu Glu Ala Glu Gly Met Ser Lys | | | |
| 505 | 510 | 515 | |
| tca tac tgc agt ggg acg gaa cgg gtg agc ctg atg gct gat ggg aag | | | 1760 |
| Ser Tyr Cys Ser Gly Thr Glu Arg Val Ser Leu Met Ala Asp Gly Lys | | | |
| 520 | 525 | 530 | |
| atc ttt gtg gga agc ggc agc agt gga ggc act gaa ggg ctg gtt atg | | | 1808 |
| Ile Phe Val Gly Ser Gly Ser Ser Gly Gly Thr Glu Gly Leu Val Met | | | |
| 535 | 540 | 545 | |
| aac tca gat ata ctc ggt gct acc aca gag gtt ctg att gaa gat tca | | | 1856 |
| Asn Ser Asp Ile Leu Gly Ala Thr Thr Glu Val Leu Ile Glu Asp Ser | | | |
| 550 | 555 | 560 | 565 |
| gac tct gcc gga cct tagtggacag gaagacttgg ggcatgggac agctcagact | | | 1911 |
| Asp Ser Ala Gly Pro | | | |
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| gcgcattgcca cggagcgccc ctggggcggc cgccgctcct gcccgggccc ctgctgctgc | | | 180 |
| tgctgtcgcc tgcgcctgct gcccgaactc ggcgcccgcac tcacaaagaa acatcatgtt | | | 240 |
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| | | Met Phe Arg | |
| | | 1 | |
| acc aaa cga tct gcg ctc gtc cgg cgt ctc tgg agg agc cgt gcg ccc | | | 344 |
| Thr Lys Arg Ser Ala Leu Val Arg Arg Leu Trp Arg Ser Arg Ala Pro | | | |
| 5 | 10 | 15 | |
| ggc ggc gag gac gag gag gag ggc gca ggg gga ggt gga gga gga ggc | | | 392 |
| Gly Gly Glu Asp Glu Glu Glu Gly Ala Gly Gly Gly Gly Gly Gly | | | |
| 20 | 25 | 30 | 35 |
| gag ctg cgg gga gaa ggg gcg acg gac agc cga gcg cat ggg gcc ggt | | | 440 |
| Glu Leu Arg Gly Glu Gly Ala Thr Asp Ser Arg Ala His Gly Ala Gly | | | |
| 40 | 45 | 50 | |
| ggc ggc ggc ccg ggc agg gct gga tgc tgc ctg ggc aag gcg gtg cga | | | 488 |
| Gly Gly Gly Pro Gly Arg Ala Gly Cys Cys Leu Gly Lys Ala Val Arg | | | |
| 55 | 60 | 65 | |

| | |
|---|------|
| ggt gcc aaa ggt cac cac cat ccc cac ccg cca gcc gcg ggc gcc ggc | 536 |
| Gly Ala Lys Gly His His His Pro His Pro Pro Ala Ala Gly Ala Gly | |
| 70 75 80 | |
| gcg gcc ggg ggc gcc gag gcg gat ctg aag gcg ctc acg cac tcg gtg | 584 |
| Ala Ala Gly Gly Ala Glu Ala Asp Leu Lys Ala Leu Thr His Ser Val | |
| 85 90 95 | |
| ctc aag aaa ctg aag gag ccg cag ctg gag ctg ctg ctc cag gcc gtg | 632 |
| Leu Lys Lys Leu Lys Glu Arg Gln Leu Glu Leu Leu Leu Gln Ala Val | |
| 100 105 110 115 | |
| gag tcc cgc ggc ggg acg cgc acc gcg tgc ctc ctg ctg ccc ggc cgc | 680 |
| Glu Ser Arg Gly Gly Thr Arg Thr Ala Cys Leu Leu Leu Pro Gly Arg | |
| 120 125 130 | |
| ctg gac tgc agg ctg ggc ccg ggg gcg ccc gcc ggc gcg cag cct gcg | 728 |
| Leu Asp Cys Arg Leu Gly Pro Gly Ala Pro Ala Gly Ala Gln Pro Ala | |
| 135 140 145 | |
| cag ccg ccc tcg tcc tac tcg ctc ccc ctc ctg ctg tgc aaa gtg ttc | 776 |
| Gln Pro Pro Ser Ser Tyr Ser Leu Pro Leu Leu Leu Cys Lys Val Phe | |
| 150 155 160 | |
| agg tgg ccg gat ctc agg cat tcc tcg gaa gtc aag agg ctg tgt tgc | 824 |
| Arg Trp Pro Asp Leu Arg His Ser Ser Glu Val Lys Arg Leu Cys Cys | |
| 165 170 175 | |
| tgt gaa tct tac ggg aag atc aac ccc gag ctg gtg tgc tgc aac ccc | 872 |
| Cys Glu Ser Tyr Gly Lys Ile Asn Pro Glu Leu Val Cys Cys Asn Pro | |
| 180 185 190 195 | |
| cat cac ctt agc cga ctc tgc gaa cta gag tct ccc ccc cct cct tac | 920 |
| His His Leu Ser Arg Leu Cys Glu Leu Ser Pro Pro Pro Pro Tyr | |
| 200 205 210 | |
| tcc aga tac ccg atg gat ttt ctc aaa cca act gca gac tgt cca gat | 968 |
| Ser Arg Tyr Pro Met Asp Phe Leu Lys Pro Thr Ala Asp Cys Pro Asp | |
| 215 220 225 | |
| gct gtg cct tcc tcc gct gaa aca ggg gga acg aat tat ctg gcc cct | 1016 |
| Ala Val Pro Ser Ser Ala Glu Thr Gly Gly Thr Asn Tyr Leu Ala Pro | |
| 230 235 240 | |
| ggg ggg ctt tca gat tcc caa ctt ctt ctg gag cct ggg gat cgg tca | 1064 |
| Gly Gly Leu Ser Asp Ser Gln Leu Leu Leu Glu Pro Gly Asp Arg Ser | |
| 245 250 255 | |
| cac tgg tgc gtg gtg gca tac tgg gag gag aag acg aga gtg ggg agg | 1112 |
| His Trp Cys Val Val Ala Tyr Trp Glu Glu Lys Thr Arg Val Gly Arg | |
| 260 265 270 275 | |
| ctc tac tgt gtc cag gag ccc tct ctg gat atc ttc tat gat cta cct | 1160 |
| Leu Tyr Cys Val Gln Glu Pro Ser Leu Asp Ile Phe Tyr Asp Leu Pro | |
| 280 285 290 | |
| cag ggg aat ggc ttt tgc ctc gga cag ctc aat tcg gac aac aag agt | 1208 |
| Gln Gly Asn Gly Phe Cys Leu Gly Gln Leu Asn Ser Asp Asn Lys Ser | |

| 295 | 300 | 305 | |
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| cag ctg gtg cag aag gtg cgg agc aaa atc ggc tgc ggc atc cag ctg Gln Leu Val Gln Lys Val Arg Ser Lys Ile Gly Cys Gly Ile Gln Leu 310 315 320 | | | 1256 |
| acg cgg gag gtg gat ggt gtg tgg gtg tac aac cgc agc agt tac ccc Thr Arg Glu Val Asp Gly Val Trp Val Tyr Asn Arg Ser Ser Tyr Pro 325 330 335 | | | 1304 |
| atc ttc atc aag tcc gcc aca ctg gac aac ccg gac tcc agg acg ctg Ile Phe Ile Lys Ser Ala Thr Leu Asp Asn Pro Asp Ser Arg Thr Leu 340 345 350 355 | | | 1352 |
| ttg gta cac aag gtg ttc ccc ggt ttc tcc atc aag gct ttc gac tac Leu Val His Lys Val Phe Pro Gly Phe Ser Ile Lys Ala Phe Asp Tyr 360 365 370 | | | 1400 |
| gag aag gcg tac agc ctg cag cgg ccc aat gac cac gag ttt atg cag Glu Lys Ala Tyr Ser Leu Gln Arg Pro Asn Asp His Glu Phe Met Gln 375 380 385 | | | 1448 |
| cag ccg tgg acg ggc ttt acc gtg cag atc agc ttt gtg aag ggc tgg Gln Pro Trp Thr Gly Phe Thr Val Gln Ile Ser Phe Val Lys Gly Trp 390 395 400 | | | 1496 |
| ggt cag tgc tac acc cgc cag ttc atc agc agc tgc ccg tgc tgg cta Gly Gln Cys Tyr Thr Arg Gln Phe Ile Ser Ser Cys Pro Cys Trp Leu 405 410 415 | | | 1544 |
| gag gtc atc ttc aac agc cgg tagccgcgtg cggaggggac agagcgtgag Glu Val Ile Phe Asn Ser Arg 420 425 | | | 1595 |
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| | |
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| ttc gcc ctg ggt tac aag gct gcg gac ttc cag ctg cac aca cat gtg Phe Ala Leu Gly Tyr Lys Ala Ala Asp Phe Gln Leu His Thr His Val 170 175 180 | 641 |
| aac gat ggc act gaa ttt gga ggt tct atc tac cag aag gtg aat gag Asn Asp Gly Thr Glu Phe Gly Gly Ser Ile Tyr Gln Lys Val Asn Glu 185 190 195 200 | 689 |
| aag att gaa aca tcc ata aac ctt gct tgg aca gct ggg agt aac aac Lys Ile Glu Thr Ser Ile Asn Leu Ala Trp Thr Ala Gly Ser Asn Asn 205 210 215 | 737 |
| acc cgt ttt ggc att gct gct aag tac atg ctg gat tgt aga act tct Thr Arg Phe Gly Ile Ala Ala Lys Tyr Met Leu Asp Cys Arg Thr Ser 220 225 230 | 785 |
| ctc tct gct aaa gta aat aat gcc agc ctg att gga ctg ggt tat act Leu Ser Ala Lys Val Asn Asn Ala Ser Leu Ile Gly Leu Gly Tyr Thr 235 240 245 | 833 |
| cag acc ctt cga cca gga gtc aaa ttg act tta tca gct tta atc gat Gln Thr Leu Arg Pro Gly Val Lys Leu Thr Leu Ser Ala Leu Ile Asp 250 255 260 | 881 |
| ggg aag aac ttc agt gca gga ggt cac aag gtt ggc ttg gga ttt gaa Gly Lys Asn Phe Ser Ala Gly Gly His Lys Val Gly Leu Gly Phe Glu 265 270 275 280 | 929 |
| ctg gaa gct taatgtgggt tgaggaaagc atcagatttg tccttggaag Leu Glu Ala | 978 |
| tgaagagaaa tgaacccact atgttttggc cttaaaaattc ttctgtgaaa tttcaaaagt gtgaactttt tattctttcca aagaattgta atcctcccca cactgaagtc taggggttgc gaatccctcc tgagggagac gcttgaaggc atgcctggaa gttgtcatgt ttgtgccacg tttcagttca gttctgaagt gttattaaat gtgttcctca gcgacagtgt agcgtcatgt tagaggagac gatctgaccc accagtttgt acatcacgtc ctgcatgtcc cacaccattt tttcatgacc ttgtaataata ctggtctctg tgctatagtg gaatcttttg ttttgcata tagtaaaata aaataaaccc atcacatttg gaacataaaa aaaaaaaaaa aaaaa | 1038 1098 1158 1218 1278 1338 1393 |
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act ctc ttc ccc gag gag gtg atc gcc acc atc ttt tcc tcc gcc tgg      96
Thr Leu Phe Pro Glu Glu Val Ile Ala Thr Ile Phe Ser Ser Ala Trp
                20                      25                      30

tgg gtc cct ccc tgc tgc ggg aca gca gct gct gtt gtt ggc cta ctg      144
Trp Val Pro Pro Cys Cys Gly Thr Ala Ala Ala Val Val Gly Leu Leu
                35                      40                      45

tac ccc tgt atc gac agt cac ctc gga gaa ccc cac aaa ttt aag aga      192
Tyr Pro Cys Ile Asp Ser His Leu Gly Glu Pro His Lys Phe Lys Arg
                50                      55                      60

gaa tgg gcc agt gtc atg cgc tgc ata gca gtt ttt gtt ggc att aac      240
Glu Trp Ala Ser Val Met Arg Cys Ile Ala Val Phe Val Gly Ile Asn
                65                      70                      75                      80

cac gcc agt gct aaa ttg gat ttt gcc aat aat gtc cag ctg tcc ttg      288
His Ala Ser Ala Lys Leu Asp Phe Ala Asn Asn Val Gln Leu Ser Leu
                85                      90                      95

act tta gca gcc cta tct ttg ggc ctt tgg tgg aca ttt gat cgt tcc      336
Thr Leu Ala Ala Leu Ser Leu Gly Leu Trp Trp Thr Phe Asp Arg Ser
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Arg Ser Gly Leu Gly Leu Gly Ile Thr Ile Ala Phe Leu Ala Thr Leu
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atc acg cag ttt ctc gtg tat aat ggt gtc tat cag tat aca tcc cca      432
Ile Thr Gln Phe Leu Val Tyr Asn Gly Val Tyr Gln Tyr Thr Ser Pro
                130                      135                      140

gat ttc ctc tat att cgt tct tgg ctc cct tgt ata ttt ttc tca gga      480
Asp Phe Leu Tyr Ile Arg Ser Trp Leu Pro Cys Ile Phe Phe Ser Gly
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Gly Val Thr Val Gly Asn Ile Gly Arg Gln Leu Ala Met Gly Val Pro
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Glu Lys Pro His Ser
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ataggagggt ggagaatgat gacttaccct gaagtcttcc cttgactgcc cgcactggcg      763
cctgtctgtg ccctggagca ttctgccag gctacgtggg ttcaggcagg tggcagcttc      823
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| Met | Cys | His | Ser | Arg | Ser | Cys | His | Pro | Thr | Met | Thr | Ile | Leu | Gln | Ala | |
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| Pro | Thr | Pro | Ala | Pro | Ser | Thr | Ile | Pro | Gly | Pro | Arg | Arg | Gly | Ser | Gly | |
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| cct | gag | atc | ttc | acc | ttc | gac | cct | ctc | ccg | gag | ccc | gca | gcg | gcc | cct | 144 |
| Pro | Glu | Ile | Phe | Thr | Phe | Asp | Pro | Leu | Pro | Glu | Pro | Ala | Ala | Ala | Pro | |
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| | | | | | | | | | | | | | | | | |
| gcc | ggg | cgc | ccc | agc | gcc | tct | cgc | ggg | cac | cga | aag | cgc | agc | cgc | agg | 192 |
| Ala | Gly | Arg | Pro | Ser | Ala | Ser | Arg | Gly | His | Arg | Lys | Arg | Ser | Arg | Arg | |
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| | | | | | | | | | | | | | | | | |
| gtt | ctc | tac | cct | cga | gtg | gtc | cgg | cgc | cag | ctg | cca | gtc | gag | gaa | ccg | 240 |
| Val | Leu | Tyr | Pro | Arg | Val | Val | Arg | Arg | Gln | Leu | Pro | Val | Glu | Glu | Pro | |
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| Asn | Pro | Ala | Lys | Arg | Leu | Leu | Phe | Leu | Leu | Leu | Thr | Ile | Val | Phe | Cys | |
| | | | 85 | | | | | 90 | | | | | | 95 | | |
| | | | | | | | | | | | | | | | | |
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| Gln | Ile | Leu | Met | Ala | Glu | Glu | Gly | Val | Pro | Ala | Pro | Leu | Pro | Pro | Glu | |
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| gac | gcc | cct | aac | gcc | gca | tcc | ctg | gcg | ccc | acc | cct | gtg | tcc | ccc | gtc | 384 |
| Asp | Ala | Pro | Asn | Ala | Ala | Ser | Leu | Ala | Pro | Thr | Pro | Val | Ser | Pro | Val | |
| | | 115 | | | | | 120 | | | | | 125 | | | | |
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| Leu | Glu | Pro | Phe | Asn | Leu | Thr | Ser | Glu | Pro | Ser | Asp | Tyr | Ala | Leu | Asp | |
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| | | | | | | | | | | | | | | | | |
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| Leu | Ser | Thr | Phe | Leu | Gln | Gln | His | Pro | Ala | Ala | Phe | | | | | |
| 145 | | | | | 150 | | | | 155 | | | | | | | |
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| gtgtacgtaa | tatttatttt | aacttatgca | agggtgtgag | atgttccctc | tgctgtaaat | | | | | | | | | | | 838 |
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| cgtctgtcta | ctgtgtgaga | cttcggcgga | ccattaggaa | tgagatccgt | gagatccttc | | | | | | | | | | | 1078 |
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ccg cca cct ccc tac tct cgg ctg tct cct cgc gac gag tac aag cca 1118
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 Asn Ser Leu Ile Thr Ala Pro Gly Glu Phe Ser Asp Ala Ser Met Ser
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cac ccg acg cgc gtg ggc cgc ctc tat gcg gtg tac gac cag gcc gtc 1310
 His Arg Thr Arg Val Gly Arg Leu Tyr Ala Val Tyr Asp Gln Ala Val
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agc atc ttc tac gac cta cct cag ggc agc ggc ttc tgc ctg ggc cag 1358
 Ser Ile Phe Tyr Asp Leu Pro Gln Gly Ser Gly Phe Cys Leu Gly Gln
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 Leu Asn Leu Glu Gln Arg Ser Glu Ser Val Arg Arg Thr Arg Ser Lys
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| Ile Gly Phe Gly Ile Leu Leu Ser Lys Glu Pro Asp Gly Val Trp Ala | |
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| tac aac cgc ggc gag cac ccc atc ttc gtc aac tcc ccg acg ctg gac | 1502 |
| Tyr Asn Arg Gly Glu His Pro Ile Phe Val Asn Ser Pro Thr Leu Asp | |
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| gcg ccc ggc ggc cgc gcc ctg gtc gtg cgc aag gtg ccc ccc ggc tac | 1550 |
| Ala Pro Gly Gly Arg Ala Leu Val Val Arg Lys Val Pro Pro Gly Tyr | |
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| tcc atc aag gtg ttc gac ttc gag cgc tcg ggc ctg cag cac gcg ccc | 1598 |
| Ser Ile Lys Val Phe Asp Phe Glu Arg Ser Gly Leu Gln His Ala Pro | |
| 175 180 185 | |
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| Glu Pro Asp Ala Ala Asp Gly Pro Tyr Asp Pro Asn Ser Val Arg Ile | |
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| tcc tgc ccc tgc tgg ctg gag atc ctc ctc aac aac ccc aga | 1736 |
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| catatcatta gatcagcttt ctgaagaata ttctccamaa aagaaagtct ccttggccag | 2936 |
| ataactaaga ggaatgtttc attgtatatc ttttttcttg gagatttata ttaacatatt | 2996 |
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Val Leu Arg Gly Gly Arg Asp Arg Gly Arg Ala Ala Ala Ala Ala
 50          55          60
Ala Ala Ala Val Ser Arg Arg Arg Lys Ala Glu Tyr Pro Arg Arg Arg
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Arg Ser Ser Pro Ser Ala Arg Pro Pro Asp Val Pro Gly Gln Gln Pro
 85          90          95
Gln Ala Ala Lys Ser Pro Ser Pro Val Gln Gly Lys Lys Ser Pro Arg
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Lys Glu Glu Glu Asp Asp Ser Ala Leu Pro Gln Glu Val Ser Ile Ala
 130         135         140
Ala Ser Arg Pro Ser Arg Gly Trp Arg Ser Ser Arg Thr Ser Val Ser
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Arg His Arg Asp Thr Glu Asn Thr Arg Ser Ser Arg Ser Lys Thr Gly
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Ser Leu Gln Leu Ile Cys Lys Ser Glu Pro Asn Thr Asp Gln Leu Asp
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Tyr Asp Val Gly Glu Glu His Gln Ser Pro Gly Gly Ile Ser Gly Glu
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Glu Glu Glu Glu Glu Glu Glu Glu Met Leu Ile Ser Glu Glu Glu Ile
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Pro Phe Lys Asp Asp Pro Arg Asp Glu Thr Tyr Lys Pro His Leu Glu
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Arg Arg Arg Lys Asp Asp Lys Ser Pro Arg Leu Pro Lys Arg Arg Lys
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Phe Arg Leu Gln Lys Gln Leu Leu Arg His Ala Lys His His Thr Asp
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Gln Arg Asp Tyr Ile Cys Glu Tyr Cys Ala Arg Ala Phe Lys Ser Ser
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His Asn Leu Ala Val His Arg Met Ile His Thr Gly Glu Lys Pro Leu
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Gln Cys Glu Ile Cys Gly Phe Thr Cys Arg Gln Lys Ala Ser Leu Asn
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Trp His Met Lys Lys His Asp Ala Asp Ser Phe Tyr Gln Phe Ser Cys
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Asn Ile Cys Gly Lys Lys Phe Glu Lys Lys Asp Ser Val Val Ala His
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Lys Ala Lys Ser His Pro Glu Val Leu Ile Ala Glu Ala Leu Ala Ala

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200020" 144.020002

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| | Glu | Pro | Leu | Gly | Asn | Ser | Thr | Ser | Gly | Glu | Cys | Leu | Leu | Leu | Glu | Ala |
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| | | | 35 | | | | 40 | | | | | 45 | | | | |
| | Gly | Ala | Gly | Gly | Gly | Gly | Pro | Gly | Arg | Ala | Gly | Cys | Cys | Leu | Gly | Lys |
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| | Pro | Gly | Arg | Leu | Asp | Cys | Arg | Leu | Gly | Pro | Gly | Ala | Pro | Ala | Gly | Ala |
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| | | | 180 | | | | | 185 | | | | | 190 | | | |
| | Cys | Asn | Pro | His | His | Leu | Ser | Arg | Leu | Cys | Glu | Leu | Glu | Ser | Pro | Pro |
| | | 195 | | | | | | 200 | | | | 205 | | | | |
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| | Asp | Arg | Ser | His | Trp | Cys | Val | Val | Ala | Tyr | Trp | Glu | Glu | Lys | Thr | Arg |
| | | | | 260 | | | | 265 | | | | | | 270 | | |
| | Val | Gly | Arg | Leu | Tyr | Cys | Val | Gln | Glu | Pro | Ser | Leu | Asp | Ile | Phe | Tyr |
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 Ser Tyr Pro Ile Phe Ile Lys Ser Ala Thr Leu Asp Asn Pro Asp Ser
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 Arg Thr Leu Leu Val His Lys Val Phe Pro Gly Phe Ser Ile Lys Ala
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 Thr Asp Thr Gly Lys Ala Ser Gly Asn Leu Glu Thr Lys Tyr Lys Val
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 Leu Gly Thr Glu Ile Ser Trp Glu Asn Lys Leu Ala Glu Gly Leu Lys
 85 90 95
 Leu Thr Leu Asp Thr Ile Phe Val Pro Asn Thr Gly Lys Lys Ser Gly
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 Lys Leu Lys Ala Ser Tyr Lys Arg Asp Cys Phe Ser Val Gly Ser Asn
 115 120 125
 Val Asp Ile Asp Phe Ser Gly Pro Thr Ile Tyr Gly Trp Ala Val Leu
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 Ala Phe Glu Gly Trp Leu Ala Gly Tyr Gln Met Ser Phe Asp Thr Ala
 145 150 155 160
 Lys Ser Lys Leu Ser Gln Asn Asn Phe Ala Leu Gly Tyr Lys Ala Ala
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 Asp Phe Gln Leu His Thr His Val Asn Asp Gly Thr Glu Phe Gly Gly
 180 185 190
 Ser Ile Tyr Gln Lys Val Asn Glu Lys Ile Glu Thr Ser Ile Asn Leu
 195 200 205
 Ala Trp Thr Ala Gly Ser Asn Asn Thr Arg Phe Gly Ile Ala Ala Lys
 210 215 220
 Tyr Met Leu Asp Cys Arg Thr Ser Leu Ser Ala Lys Val Asn Asn Ala
 225 230 235 240
 Ser Leu Ile Gly Leu Gly Tyr Thr Gln Thr Leu Arg Pro Gly Val Lys
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 35 40 45
 Ile Thr Ala Pro Gly Glu Phe Ser Asp Ala Ser Met Ser Pro Asp Ala
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 Thr Lys Pro Ser His Trp Cys Ser Val Ala Tyr Trp Glu His Arg Thr
 65 70 75 80
 Arg Val Gly Arg Leu Tyr Ala Val Tyr Asp Gln Ala Val Ser Ile Phe
 85 90 95
 Tyr Asp Leu Pro Gln Gly Ser Gly Phe Cys Leu Gly Gln Leu Asn Leu
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 Glu Gln Arg Ser Glu Ser Val Arg Arg Thr Arg Ser Lys Ile Gly Phe
 115 120 125
 Gly Ile Leu Leu Ser Lys Glu Pro Asp Gly Val Trp Ala Tyr Asn Arg
 130 135 140
 Gly Glu His Pro Ile Phe Val Asn Ser Pro Thr Leu Asp Ala Pro Gly
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 Gly Arg Ala Leu Val Val Arg Lys Val Pro Pro Gly Tyr Ser Ile Lys
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 Val Phe Asp Phe Glu Arg Ser Gly Leu Gln His Ala Pro Glu Pro Asp
 180 185 190
 Ala Ala Asp Gly Pro Tyr Asp Pro Asn Ser Val Arg Ile Ser Phe Ala
 195 200 205
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 210 215 220
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12

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10

<210> 15

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| catttcattt catacaatat atg | 23 |
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<400> 40

209020.1479001

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<212> PRT
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<400> 43
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<210> 44
<211> 15
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<211> 496

<212> PRT

<213> Homo sapiens

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 35           40           45
Ala Arg Glu Gly Gly Gly Cys Gly Arg Ser Glu Val Arg Pro Val Ala
 50           55           60
Pro Arg Arg Pro Arg Asp Ala Val Gly Gln Arg Gly Ala Gln Gly Ala
 65           70           75           80
Gly Arg Arg Arg Arg Ala Gly Gly Pro Pro Arg Pro Met Ser Glu Pro
 85           90           95
Gly Ala Gly Ala Gly Ser Ser Leu Leu Asp Val Ala Glu Pro Gly Gly
100           105           110
Pro Gly Trp Leu Pro Glu Ser Asp Cys Glu Thr Val Thr Cys Cys Leu
115           120           125
Phe Ser Glu Arg Asp Ala Ala Gly Ala Pro Arg Asp Ala Ser Asp Pro
130           135           140
Leu Ala Gly Ala Ala Leu Glu Pro Ala Gly Gly Arg Ser Arg Glu
145           150           155           160
Ala Arg Ser Arg Leu Leu Leu Leu Glu Gln Glu Leu Lys Thr Val Thr
165           170           175
Tyr Ser Leu Leu Lys Arg Leu Lys Glu Arg Ser Leu Asp Thr Leu Leu

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| | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|--|--|
| | | | 180 | | | | | | 185 | | | | | | 190 | | | | | |
| Glu | Ala | Val | Glu | Ser | Arg | Gly | Gly | Val | Pro | Gly | Gly | Cys | Val | Leu | Val | | | | | |
| | | 195 | | | | | 200 | | | | | 205 | | | | | | | | |
| Pro | Arg | Ala | Asp | Leu | Arg | Leu | Gly | Gly | Gln | Pro | Ala | Pro | Pro | Gln | Leu | | | | | |
| | 210 | | | | | 215 | | | | | 220 | | | | | | | | | |
| Leu | Leu | Gly | Arg | Leu | Phe | Arg | Trp | Pro | Asp | Leu | Gln | His | Ala | Val | Glu | | | | | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | | | | | |
| Leu | Lys | Pro | Leu | Cys | Gly | Cys | His | Ser | Phe | Ala | Ala | Ala | Ala | Asp | Gly | | | | | |
| | | | | 245 | | | | | 250 | | | | | 255 | | | | | | |
| Pro | Thr | Val | Cys | Cys | Asn | Pro | Tyr | His | Phe | Ser | Arg | Leu | Cys | Gly | Pro | | | | | |
| | | 260 | | | | | | 265 | | | | | 270 | | | | | | | |
| Glu | Ser | Pro | Pro | Pro | Pro | Tyr | Ser | Arg | Leu | Ser | Pro | Arg | Asp | Glu | Tyr | | | | | |
| | | 275 | | | | | 280 | | | | | 285 | | | | | | | | |
| Lys | Pro | Leu | Asp | Leu | Ser | Asp | Ser | Thr | Leu | Ser | Tyr | Thr | Glu | Thr | Glu | | | | | |
| | 290 | | | | | 295 | | | | | 300 | | | | | | | | | |
| Ala | Thr | Asn | Ser | Leu | Ile | Thr | Ala | Pro | Gly | Glu | Phe | Ser | Asp | Ala | Ser | | | | | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | | | | | |
| Met | Ser | Pro | Asp | Ala | Thr | Lys | Pro | Ser | His | Trp | Cys | Ser | Val | Ala | Tyr | | | | | |
| | | | 325 | | | | | | 330 | | | | | 335 | | | | | | |
| Trp | Glu | His | Arg | Thr | Arg | Val | Gly | Arg | Leu | Tyr | Ala | Val | Tyr | Asp | Gln | | | | | |
| | | | 340 | | | | | 345 | | | | | 350 | | | | | | | |
| Ala | Val | Ser | Ile | Phe | Tyr | Asp | Leu | Pro | Gln | Gly | Ser | Gly | Phe | Cys | Leu | | | | | |
| | 355 | | | | | | 360 | | | | | 365 | | | | | | | | |
| Gly | Gln | Leu | Asn | Leu | Glu | Gln | Arg | Ser | Glu | Ser | Val | Arg | Arg | Thr | Arg | | | | | |
| | 370 | | | | | 375 | | | | | 380 | | | | | | | | | |
| Ser | Lys | Ile | Gly | Phe | Gly | Ile | Leu | Leu | Ser | Lys | Glu | Pro | Asp | Gly | Val | | | | | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | | | | | |
| Trp | Ala | Tyr | Asn | Arg | Gly | Glu | His | Pro | Ile | Phe | Val | Asn | Ser | Pro | Thr | | | | | |
| | | | 405 | | | | | | 410 | | | | | 415 | | | | | | |
| Leu | Asp | Ala | Pro | Gly | Gly | Arg | Ala | Leu | Val | Val | Arg | Lys | Val | Pro | Pro | | | | | |
| | | | 420 | | | | | 425 | | | | | 430 | | | | | | | |
| Gly | Tyr | Ser | Ile | Lys | Val | Phe | Asp | Phe | Glu | Arg | Ser | Gly | Leu | Gln | His | | | | | |
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| Ala | Pro | Glu | Pro | Asp | Ala | Ala | Asp | Gly | Pro | Tyr | Asp | Pro | Asn | Ser | Val | | | | | |
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| Arg | Ile | Ser | Phe | Ala | Lys | Gly | Trp | Gly | Pro | Cys | Tyr | Ser | Arg | Gln | Phe | | | | | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | | | | | |
| Ile | Thr | Ser | Cys | Pro | Cys | Trp | Leu | Glu | Ile | Leu | Leu | Asn | Asn | Pro | Arg | | | | | |
| | | | | 485 | | | | | 490 | | | | | 495 | | | | | | |